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GREDELL Engineering Resources, Inc.

HEALTH and SAFETY PLAN
for
Spent Blast Media Treatment and Disposal Work Plan
at
W&B of Franklin County (formerly Missouri Green Materials, LLC) 7627 Zero Road, Berger, Missouri

Submitted to:
US EPA Region 7
11201 Renner Blvd
Lenexa, KS 66219

Prepared for:
US Technology Corporation
4200 Munson Street NW
Canton, OH 44718

Prepared by:
GREDELL Engineering Resources, Inc.
1505 E High St
Jefferson City, MO 65101

December 7, 2016

565394

Spent Blast Media Treatment and Disposal
at W&B of Franklin County
(formerly Missouri Green Materials, LLC)

HEALTH AND SAFETY PLAN

COMPANY: US Technology Corporation

SITE NAME: W&B of Franklin County

PROJECT ID: Under Consent Agreement and Final Order
Docket No. RCRA-07-2017-0032

SITE ADDRESS: 7627 Zero Road
Berger, MO 63014

DATE: December 7, 2016

PLAN EXPIRATION DATE: December 31, 2017

HASP APPROVALS:

TITLE	NAME	SIGNATURE	DATE
US Technology Treatment & Disposal Project Manager	Raymond Williams		
US Technology Field Supervisor/Site Safety Officer	(TBD)		
US Technology Human Resources Officer	(TBD)		

Spent Blast Media Treatment and Disposal
at W&B of Franklin County
(formerly Missouri Green Materials, LLC)

HEALTH AND SAFETY PLAN

December 2016

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1.0 GENERAL INFORMATION

1.1 Introduction

This Health and Safety Plan (HASP) has been prepared to address field activities associated with the implementation of a Spent Blast Media (SBM) Treatment and Disposal Work Plan at the W&B of Franklin County (W&B) (formerly Missouri Green Materials, LLC) facility. The minimum recommended training requirements for site personnel include the 40-hour Occupational Safety and Health (OSHA) training in Hazardous Waste Operations and Emergency Response (HAZWOPER) contained in 29 CFR 1910.120 with current annual refresher updates and 10-hour OSHA Training Course in Construction Safety and Health certification and applicable updates contained in the OSHA Safety Training Handbook (J.J. Keller & Associates, Inc., 7th Edition, 2012). The HASP addresses those activities associated with the stated work plan and should be implemented during site processing and field sampling of SBM by US Technology Corporation (US Technology) personnel during site activities. Compliance with this HASP (or equivalent substitute) is required of all persons and third parties that enter defined project limits during the performance of the work. Assistance in implementing the HASP can be obtained from the US Technology Site Safety Officers (SSO) or Project Manager. The content of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results or changes in the work plan. Proposed changes must be reviewed and are subject to approval by the Project Manager.

This HASP is for use by US Technology and their employees. Properly trained and experienced subcontractors may also use this HASP as a guidance document. However, the development of this document by GREDELL Engineering Resources, Inc. (Gredell Engineering) does not guarantee, either expressly or implied, the health or safety of persons entering this site during the performance of the site processing work.

Due to potentially hazardous conditions that may be encountered at this site during the execution of field activities, it is not possible to discover, evaluate and provide protection for every hazardous circumstance that might be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this HASP were prepared specifically for this site and should not be used on any other site without prior research by trained health and safety specialists. Gredell Engineering neither claims nor accepts responsibility for use of this document by others.

1.2 Site Personnel

Personnel authorized to enter the subject site while operations are being conducted should be trained in conformance with the 40-hour OSHA training in HAZWOPER with current annual refresher updates and 10-hour OSHA Training Course in Construction Safety and Health, site-specific safety protocols required by US Technology (Attachment 1), and/or other applicable regulations and review/sign-off of this HASP.

Personnel Identification (see Attachment 2 for Personnel Responsibilities).

TITLE	NAME	PHONE NO.
US Technology Treatment & Disposal Project Manager	Raymond Williams	[redacted] Ex. 6 PII
US Technology Field Supervisor/Site Safety Officer	(TBD)	( ) -
Team Members	Robert Putnam (US Technology)	( ) -
	Robert Harris (US Technology)	( ) -
	Rickie Roberts, P.E.	[redacted] Ex. 6 PII
	Travis A. Doll, R.G., R.E.H.S.	[redacted] Ex. 6 PII
	Kat Brookshire, E.I. (Gredell Engineering)	[redacted] Ex. 6 PII
	Andrew Rackers, P.E. (Gredell Engineering)	[redacted] Ex. 6 PII
XRF Technician	(TBD)	( ) -
Subcontractor	PDC Laboratories, Inc.	(314) 595-7339

1.3 Training

Training requirements are intended to provide employees with the knowledge and skills necessary to perform site operations while minimizing the potential for injury. Minimum recommended training requirements for site personnel include the 40-hour OSHA training in HAZWOPER contained in 29 CFR 1910.120 with current annual refresher updates and 10-hour OSHA Training Course in Construction Safety and Health certification and applicable updates contained in the OSHA Safety Training Handbook (J.J. Keller & Associates, Inc., 7th Edition, 2012). In addition, the Project Managers and/or Site Safety Officers should be HAZWOPER trained in accordance with the requirements of 29 CFR 1910.120 including applicable supervisory training and current

annual refresher updates. Training will be documented by record and/or certificate, and copies of certificates (Attachment 3) shall be kept on-site by the US Technology Field Supervisor/SSO.

Site-specific training will consist of an initial health and safety briefing on the information presented in the HASP, followed by daily meetings that are to be recorded on the data sheets (Attachment 4), or similar form. Site-specific training will be conducted prior to the initiation of field activities. Topics covered include:

- Names of individuals responsible for site health and safety and methods of communicating safety and health concerns
- Site-specific health and safety hazards
- Use of personal protective equipment (PPE)
- Work practices by which employees can minimize risks
- Safe use of equipment on site
- Recognition of symptoms and signs of exposure to hazardous materials
- Site control measures
- Decontamination procedures
- Emergency response procedures

At the beginning of each day, subsequent to the initiation of field activities, a brief "tail gate safety" meeting will be conducted by the US Technology Field Supervisor/SSO to address scheduled work. The daily meeting will provide the opportunity for the US Technology Field Supervisor/SSO to address any special health and safety issues and to notify individuals of any deficiencies in work practices. The meeting will emphasize specific concerns associated with pending field activities. Daily weather reports will also be discussed to determine if changes in work/rest regimen are required. The daily briefings shall be documented on the data sheets (Attachment 5), or similar form.

1.4 Signature and Acknowledgement

US Technology personnel and their subcontractors, either working at or visiting the site must acknowledge the contents of this HASP have been reviewed with them by signing below. By signing, each person agrees that he/she has read and understands this HASP and agrees to comply with it.

	Print Name	Signature	Date	Company
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2.0 PROJECT INFORMATION

2.1 Site Description

The W&B facility was previously a manufacturing facility located on approximately 21 acres of ground located in Section 34, T46N, R04W, west of the town of Berger, Franklin County, Missouri (Figure 1). The physical site address is 7627 Zero Road, Berger, Missouri, 63014. The northern side of the site is bordered by agricultural wooded properties and the Union Pacific Rail Road to the extreme north. The eastern and western sides of the property are bordered by agricultural properties and a few residential homes. The southern side is bordered by Zero Road (paved), Little Berger Creek and agricultural property, and access to the site is attained by the use of gravel driveways off of Zero Road.

The site is located in the Ozark Plateau Physiographic Province. The local topography is relatively flat with a gentle slope to the south towards Little Berger Creek. Ground surface elevation is approximately 515 feet above mean sea level, and the facility is approximately 2,000 feet south of the Missouri River. According to information obtained from the MDNR GeoSTRAT web-based program and private well drilling log information, alluvial soils attain an approximate thickness of 90 feet and the uppermost bedrock consists of the Jefferson City Dolomite.

The site facility (building) was constructed around 1970 for Zero Manufacturing, a manufacturer of industrial tanks (Figure 2). In 1998, the building was occupied by Gencorp Automotive who processed rubber compounds into automotive sealing products. MGM leased and co-operated within the facility, thereafter. The main facility is currently an 110,000 square feet industrial warehouse, which includes 12,000 square feet of floor-level and Mezzanine office space, and five truck loading docks. Other site appurtenances include an inoperable two-cell wastewater lagoon; inoperable private water well, well house and water storage tower; attached utility building (i.e., previous compressor storage) and adjacent electrical substation; and a detached open-air outbuilding. The entire floor of the building is constructed with six-inch reinforced concrete, and all loading docks and garage entryways and their immediately surrounding areas are also paved with concrete.

2.2 Purpose of Site Work

The purpose of this site work is to attain compliance required by the Environmental Protection Agency's (EPA) Region 7 Consent Agreement and Final Order (CA/FO) dated September 21, 2016, Docket No.: RCRA-07-2016-0032. Services include ongoing and routine sampling; analysis and documentation during the SBM processing, stabilization and disposal of SBM currently stored at the W&B facility. US Technology will complete these services in general accordance with the CA/FO and the August 8, 2016 Offer to Compromise Pursuant to R. 408 and Stabilization Plan prepared by Mills, Mills, Fiely & Lucas on behalf of US Technology. The

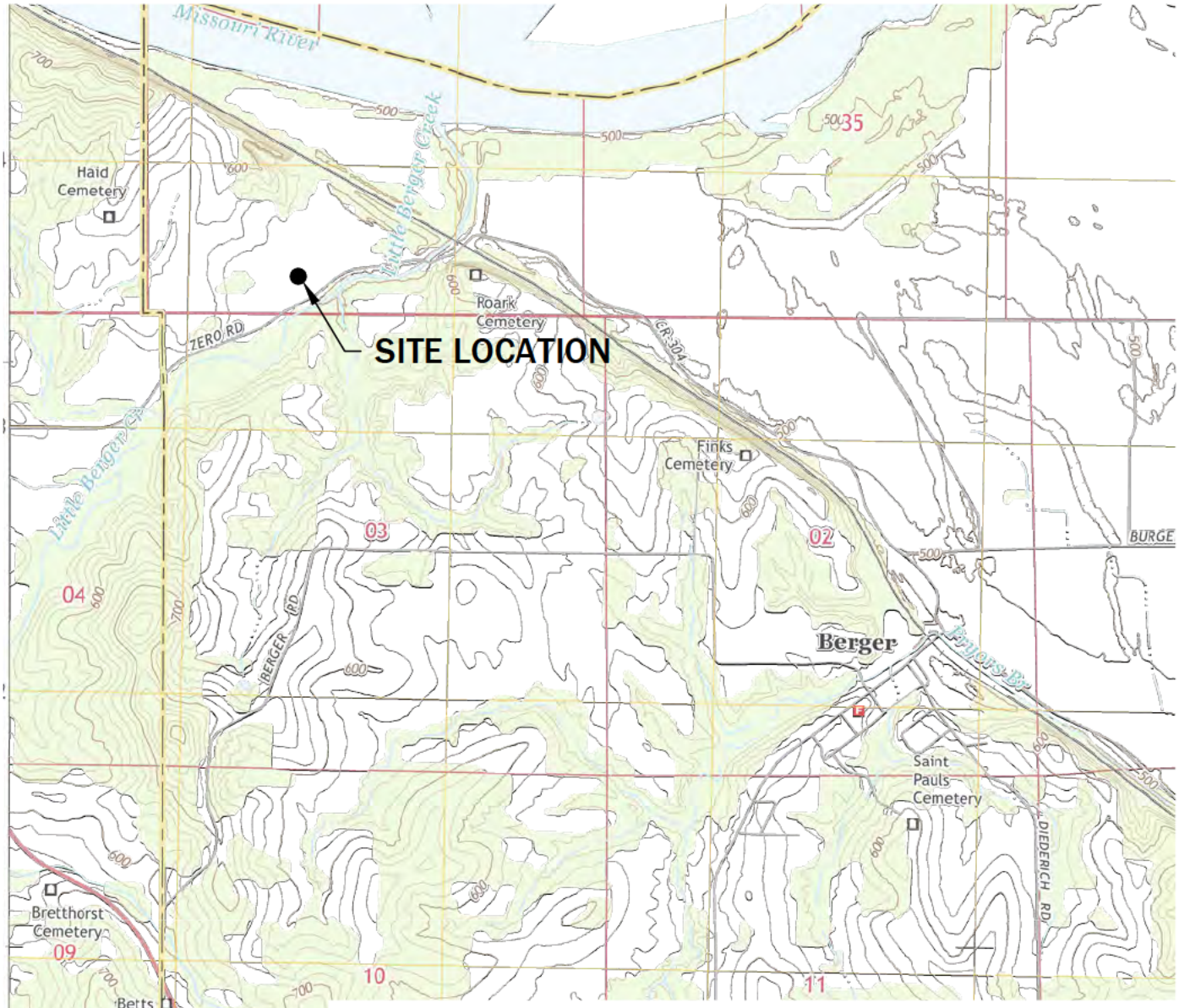
proposed processing work will be completed by US Technology, as the contractor, and their subcontractors, while Gredell Engineering will fulfill the duties of the CA/FO project manager and the engineering firm of record, in general accordance with the CA/FO.

As a part of the resolution of the disposition of SBM stored at the W&B facility, approximately 6,500 tons of recovered SBM impacted with cadmium, chromium and lead is currently stored in super sacks and drums, and are proposed to be treated and stabilized on site with Portland cement and disposed at an MDNR approved Subtitle D landfill facility.

2.3 Scope of Field Activities (by general task in order of execution)

TASKS

1. Mobilize to site.
2. Background soil sample collection and field screening.
3. Coordinate/setup staging area and exclusion zone.
4. Coordinate/setup contamination reduction and support zones.
5. Process equipment installation.
6. Process equipment operation – treatment, stockpiling, and hauling.
7. SBM sampling.
8. Site restoration, post-processing sampling and field screening.
9. Demobilization.



USGS BERGER (2015)
MISSOURI
7.5 MINUTE SERIES
T 43 N, R 8 W

SBM TREATMENT & DISPOSAL WORK PLAN
W&B OF FRANKLIN COUNTY
7627 ZERO RD, BERGER, MO
US TECHNOLOGY CORPORATION

FIGURE 1 - SITE LOCATION MAP

GREDELL Engineering Resources, Inc.

ENVIRONMENTAL ENGINEERING LAND - AIR - WATER

1505 East High Street
Jefferson City, Missouri

Telephone: (573) 659-9078
Facsimile: (573) 659-9079

MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE	SCALE	PROJECT NAME	REVISION
12/2016	AS NOTED	USTECHNOLGY	
DRAWN	APPROVED	FILE NAME	SHEET #
AJK	TD	TREATMENT DISPOSAL	1 OF 1

M:\Share\CADDFiles\USTechnology\TREATMENT DISPOSAL dwg, FIGURE 1 - SITE LOCATION MAP, 12/5/2016 12:6:50 PM

LEGEND

PROPOSED BACKGROUND SOIL SAMPLE LOCATIONS (10) ⊕

NOTES:

1. BACKGROUND IMAGE PROVIDED BY BING MAPS.

N

SCALE: 1" = 200'

0 100 200

SBM TREATMENT & DISPOSAL WORK PLAN
W&B OF FRANKLIN COUNTY
7627 ZERO RD, BERGER, MO
US TECHNOLOGY CORPORATION

FIGURE 2 - SITE LAYOUT

GREDELL Engineering Resources, Inc.

ENVIRONMENTAL ENGINEERING LAND - AIR - WATER

1505 East High Street
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DRAWN	APPROVED	FILE NAME	SHEET #
AJK	TD	TREATMENT DISPOSAL	1 OF 1

M:\Share\CADDFiles\USTechnology\TREATMENT DISPOSAL dwg, FIGURE 2 - SITE LAYOUT, 12/5/2016 1:26:56 PM

3.0 HEALTH AND SAFETY RISK ANALYSIS

3.1 Hazard Analysis

Non-chemical hazards are associated with:

- Hand tools/power tools
- Sampling equipment
- Overhead power lines
- Traffic/public roads
- Heavy equipment (cement truck, front-end loader, forklift, dump/haul trucks)
- Heat/cold exposure
- Noise
- Slips/trips/falls
- Biologic (pigeons, rodents, bats)
- Abandoned structures

Chemical hazards are associated with:

- Diesel fuel associated with heavy equipment
- Gasoline associated with support machines
- Materials (Portland cement)
- SBM impacted with cadmium, chromium and lead

The overall hazard is:

_____ Low
__X__ Moderate
_____ High

3.2 Non-Chemical Hazard Summary

See Table 3-1 for summary assessment of non-chemical hazards.

Biological Hazards

Mold spores found within the facility's office areas during the 2007 Phase I and II Environmental Site Investigations are a biological hazard of concern. Mold spores may cause runny nose, eye irritation, skin irritation, cough, congestion, and aggravate asthma. Severe reactions may include fever and shortness of breath. Some people with chronic lung illnesses, such as obstructive lung disease, may develop mold infections in their lungs. Workers should avoid the office areas and other areas known to have mold.

Biological hazards associated with bird, bat, and rodent droppings that may be present in the building may cause fungal, bacterial, and viral infections in humans. Any worker operating in or around pest droppings, carcasses, or nesting material should be trained for hazardous/infectious material cleaning, removal and disposal procedures. Dust prevention measures must be taken before work can begin in any area with droppings. Disinfection of fecal material should be performed before removal in accordance with cleaning & disinfecting guidelines for bird, bat, and rodent droppings (Attachment 6). Appropriate PPE should be donned in areas where such material may be encountered.

Heat Related Hazards

Heat stress is a concern when the temperature of the work area is above 70°F especially in high humidity environments and when workers are subjected to strenuous work. To minimize the likelihood of employee heat stress, workers should follow heat stress safety guidelines. Workers should avoid prolonged periods of time in high heat environments; take regular breaks especially when feeling fatigued from the heat; consume increased amounts of fresh water (or electrolyte enhanced “sport” drinks) to replenish body fluids; observe coworkers for signs of fatigue; and report any symptoms to the US Technology Field Supervisor/SSO.

Confined Spaces

Workplaces that are not intended for human occupancy are defined as confined spaces. Limited openings hinder proper ventilation, escape, and rescue; therefore, creating a potentially life threatening situation for a worker. Confined space entry will not be undertaken without prior approval from the US Technology Field Supervisor/SSO. Confined space entry is governed by the OSHA regulation, 29 CFR 2910.146.

Fire Hazards

Smoking will not be allowed inside the processing, stockpile and loading areas. Cigarettes, lighters, chewing tobacco (or any other personal effects) will not be allowed in these areas. Debris (paper, brush, scrap, wood, etc.) shall be removed from work areas on a daily basis or as needed to preclude accumulation of sources of fuel. Flammable and combustible liquids will be maintained in the smallest quantities possible. Fuel cans will have a designated storage area. Portable fire extinguishers shall be provided in all processing and loading areas. Each process worker will receive instruction on the proper operation of a portable fire extinguisher.

Electrical Hazards

Working with electrical systems to install necessary services to buildings and equipment presents safety hazards. Lack of basic electrical safety and sound wiring practices can result in fatalities due to electric shock.

- Three-wire (grounded) systems with ground fault circuit interrupters (GFCI) will be used on all temporary 110-volt electrical systems (extension cords, etc.).
- Wiring should be performed by an electrician.
- Any wiring required will be protected from the elements while in use.
- High-voltage overhead lines will be identified to all equipment operators and truck drivers, and safe clear distances will be maintained at all times.
- Lock Out / Tag out (LOTO) must be used to de-energize any electrical component being removed or worked around.

Heavy Equipment

Working with tools and heavy equipment is a major hazard at the site. Injuries can result from equipment striking or crushing personnel, impacts from flying objects, burns from hot objects, and damage to PPE. The following general precautions will be followed to help prevent injuries from such hazards:

- Before any heavy equipment, machinery or mechanized equipment is placed in use, it must be in safe operating condition.
- The US Technology Field Supervisor/SSO will designate a competent person to be responsible for the daily inspection of all machinery/equipment and during use to make sure it is in safe operating condition. Checks will be made at the beginning of each shift. The equipment to be used will be tested to determine that the brakes and operating systems are in proper working condition.
- Preventative maintenance procedures recommended by the equipment manufacturer will be followed.
- Any machinery or equipment found to be unsafe will be removed from service, tagged as unsafe, and its use prohibited until safe conditions have been restored.
- Machinery and mechanized equipment will be operated only by designated, experienced and qualified personnel. Equipment deficiencies observed at any time that affect their safe operation will be corrected before continuing operation.
- Getting off or on any equipment while in motion is prohibited.
- Machinery or equipment will be shut down and positive means (e.g., LOTO) taken to prevent its operation while repairs or manual lubrications are being completed. (*Exemption: Equipment designed to be serviced while running).*
- Front-end loader buckets, dump bodies, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All controls will be in a neutral position, with the engines stopped and brakes set, unless work being performed on the machine requires otherwise.

- All points requiring lubrication during operation will have fittings located and guarded as to be accessible to employees without potential for injury.
- When necessary, all mobile equipment and the area in which it is operated will be adequately illuminated while work is in progress.
- Mechanized equipment will be shut down prior to and during fueling operations. Closed systems, with automatic shutoff that will prevent spillage if connections are broken, may be used to fuel diesel-powered equipment left running.
- All towing devices used on any combinations of equipment will be structurally adequate for the weight drawn and securely mounted.
- Personnel will not be permitted to enter between a towed object and towing piece of equipment until the towing equipment has been stopped and secured by setting the brakes, placing in neutral, and chocking.
- All equipment with windshields will be equipped with powered wipers. Vehicles that operate under conditions that cause fogging or frosting of windshields will be equipped with operable defogging or defrosting devices.
- The controls of loaders, excavators, or similar equipment with folding booms or lift arms will not be operated from a ground position unless so designed.
- All self-propelled construction equipment except light service trucks, whether moving alone or in combination, should be equipped with a reverse signal alarm. The alarm will be audible and sufficiently distinct to be heard above prevailing conditions and will operate automatically upon commencement of backward motion. The alarm may be continuous or intermittent and will operate during the entire backward movement.

3.3 Site Contaminant Source(s) and Data

See Table 3-2 for summary list of potential contaminants.

3.4 Chemical Hazard Summary

See Table 3-3 for summary assessment of chemical hazards and Safety Data Sheets (Attachment 7)

Table 3-1: Assessment of Non-Chemical Hazards

Non-Chemical Hazard	Yes	No	Task(s)	Non-Chemical Hazard	Yes	No	Task(s)
1. Electrical (e.g.,overhead lines)	X		All	16. Shoring		X	
2. Electrical (e.g.,underground lines)	X		All	17. Scaffolding		X	
3. Gas/Water lines		X		18. Biologic	X		2-8
4. Drilling Equipment		X		19. Holes/Ditches		X	
5. Excavation Equipment		X		20. Steep Grades		X	
6. Machinery	X		3-8	21. Slippery Surfaces	X		2-8
7. Heat Exposure	X		1-9	22. Uneven Terrain		X	
8. Cold Exposure	X		1-9	23. Unstable Surfaces		X	
9. Oxygen Deficiency	X		3-8	24. Elevated Surfaces	X		3-8
10. Confined Spaces	X		3-8	25. Lighting	X		3-8
11. Noise	X		3-8	26.			
12. Ionizing Radiation		X		27.			
13. Non-ionizing Radiation		X		28.			
14. Fire	X		3-8	29.			
15. Explosive Atmospheres	X		3-8	30.			

TASKS

1. Mobilize to site.
2. Background soil sample collection and field screening.
3. Coordinate/setup staging area and exclusion zone.
4. Coordinate/setup contamination reduction and support zones.
5. Process equipment installation.
6. Process equipment operation – treatment, stockpiling, and hauling.
7. SBM sampling.
8. Site restoration, post-processing sampling and field screening.
9. Demobilization.

Table 3-2: Potential Contaminants

Contaminant	Source of Contamination	Location
Portland Cement	SBM Processing	Staging & Processing Area
Motor Oil	Machinery Maintenance	Staging & Processing Area
Diesel Fuel	Machinery Fueling	Staging & Processing Area
Gasoline	Machinery Fueling	Staging & Processing Area
Carbon Monoxide	Heavy Equipment, Cement Mixer and Dump Trucks	Staging, Processing, Stockpile and Loading Areas
Cadmium Dust	SBM Processing	Staging, Processing, Stockpile and Loading Areas
Chromium Dust	SBM Processing	Staging, Processing, Stockpile and Loading Areas
Lead Dust	SBM Processing	Staging, Processing, Stockpile and Loading Areas

Table 3-3: Assessment of Chemical Hazards

Task Number(s)	Chemical Name (or class)	Time-Weighted Average	Other Limits (specify)	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
Staging, Processing & Restoration (6-8)	Portland Cement	0.05 mg/m³ TWA (SiO_2 component)		Inhalation/Respiration Skin may cause irritation Ingestion unl kely	Possible irritation of eyes, skin, and throat	Repeated inhalation may cause silicosis, lung cancer, bronchitis and kidney disease.
All Tasks	Motor Oil	None		(Based on Kerosene) Inhalation, skin/eye contact, ingestion	Possible irritation of skin, eyes, nose, and throat; burning sensation in chest, headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness, vomiting, diarrhea, dermatitis, and chemical pneumonitis (aspiration liquid).	Damage to skin, eyes, respiratory system and central nervous system.
All Tasks	Diesel Fuel	TWA (100 mg/m³ vapor and aerosol as total hydrocarbons)		Skin: Confirmed animal carcinogen with unknown relevance to humans	Possible irritation of eyes, skin, and throat; dizziness, headache, and nausea.	Liquid defats skin.
All Tasks	Gasoline	900 mg/m³ TWA (300 ppm) vapor and aerosol as total hydrocarbons)		Inhalation/Respiration Skin may cause irritation Ingestion unl kely	Possible irritation of eyes, skin, and throat; headache, dizziness, blurred vision, confusion, slurred speech, and convulsions.	Possible liver/kidney damage and potential carcinogen.
Staging, Processing & Restoration (3-8)	Cadmium Dust	0.005 mg/m³ TWA		Inhalation	Cough, chest tightness, headache, chills, muscle aches, nausea, vomiting, diarrhea,	Pulmonary edema, anemia, and potential carcinogen
Staging, Processing & Restoration (3-8)	Chromium Dust	0.50 mg/m³ TWA		Inhalation, ingestion, skin/eye contact	Skin/eye irritant, respiratory irritant	Pulmonary fibrosis
Staging, Processing & Restoration (3-8)	Lead Dust	0.050 mg/m³ TWA		Inhalation, ingestion, skin/eye contact	Weakness, lassitude, insomnia; facial pallor; eye pallor, anorexia, constipation, abdominal pain, colic; gingival lead line; tremors;; irritated eyes; hypotension.	low body weight, malnutrition, anemia, wrist and ankle paralysis, brain damage, kidney damage
Staging, Processing & Restoration (3-8)	Carbon Monoxide	55 mg/m³ TWA	NIOSH 35 ppm OSHA 50 ppm	Inhalation, contact (liquid form)	Headache, tachypnea, nausea, dizziness, hallucinations, angina, syncope, death.	Death

TASKS:

1. Mobilize to site.
2. Background soil sample collection and field screening.
3. Coordinate/setup staging area and exclusion zone.
4. Coordinate/setup contamination reduction and support zones.
5. Process equipment installation.
6. Process equipment operation – treatment, stockpiling, and hauling.
7. SBM sampling.
8. Site restoration, post-processing sampling and field screening.
9. Demobilization.

3.5 First Aid/CPR Training

The SSO and additional designees should possess current certification in first aid and Cardiopulmonary resuscitation (CPR). At least one person so certified should be present during each work shift while US Technology and/or visitors or their subcontractors are on site.

3.6 General Medical Program

All US Technology employees involved with the processing, field sampling and site restoration should be provided with a medical examination prior to commencing work or sometime within the preceding 12 months. The examination will meet requirements of USEPA, OSHA 29 CFR 1910.120, 1910.134, and ANSI Z88.2. The medical protocol may include the following, at the discretion of the Occupational Physician:

1. Medical and Work History;
2. General Physical Examination (including evaluation of all major organ systems);
3. Audiogram;
4. Electrocardiogram;
5. Biological Blood Profile (SMAC-20-25);
6. Complete Blood Count (CBC) with differential;
7. Chest X-ray (as clinically indicated);
8. Pulmonary Function Testing;
9. Urinalysis with Microscopic Examination, Heavy Metals;
10. Ability to wear a respirator;
11. Visual acuity;
12. Specific Bioassays (as required), and;
13. Lead blood-lead level (BLL) or zinc protoporhyrin (ZPP).

Additional clinical tests may be included at the discretion of the Occupational Physician.

Periodic (annual) surveillance examinations should be performed, as described above, for all on-site employees included in the medical surveillance program. In addition, nonscheduled medical examinations should be conducted under the following circumstances:

1. Every six months per the State of Missouri under the Lead Licensing requirements;
2. After acute exposure to any toxic or hazardous material;
3. At the discretion of the US Technology Project Manager, SSO, and Occupational Physician, when an employee reports the potential exposure to dangerous levels of toxic or hazardous materials;

4. At the discretion of the Project Manager, SSO, and Occupational Physician, and upon receipt of a request for a medical examination from an employee with demonstrated symptoms of exposure to hazardous substances.

US Technology will maintain necessary medical surveillance records for its employees and will require lower-tier subcontractors to do likewise. These records will be available to the regulatory agencies upon request by appropriate officials following all rules prescribed under 29 CFR 1910.120. These records will be maintained for the duration of employment plus 30 years.

3.7 Respirator Certification

Prior to authorizing the use of any air purifying or supplied-air respirator, OSHA, under 29 CFR 1910.134 and 29 CFR 1925.58, requires that a determination be made regarding the prospective wearer's physical ability to safely use such equipment. Consequently, individuals scheduled to work in areas that require the use of respiratory protection must provide the SSO with current documentation, signed by a qualified physician, regarding the individual's physical ability to wear a respirator. The medical clearance form will indicate the employee's ability to wear respiratory protection on site. In addition to the medical clearance, an annual fit test should be administered to each employee using such equipment.

3.8 Exit Medical Examination

An exit medical examination should be provided for US Technology employees who are exposed to the certain contaminants such as lead, at or above levels above the published permissible exposure levels for 30 or more days per year (12 consecutive months). Annual medical examinations or exit bioassays, once the project is completed, are recommended for their employees.

4.0 HEALTH AND SAFETY FIELD IMPLEMENTATION

4.1 Personal Protective Equipment (PPE) Requirements

PPE may be upgraded or downgraded by the SSO based upon site conditions or air monitoring results (though not proposed). A summary of minimum required PPE by level of protection is provided below:

LEVEL D - Standard work clothes or coveralls with high-visibility vest or shirt, hardhat, steel-tipped boots, safety glasses, earplugs, heavy gloves, latex liner gloves.

Other levels of increased PPE are as follows (see Table 4-1 for additional PPE requirements):

LEVEL C – N95 dust make or Air purifying respirator (half or full face); chemical-resistant suit, boots, gloves.

LEVEL B - Self-contained breathing apparatus (SCBA) or supplied air respirator (SAR) with escape SCBA; chemical-resistant suit, boots, gloves.

LEVEL A - SCBA or SAR with escape SCBA; totally encapsulating suit; chemical-resistant boots and gloves; two-way radio communications.

4.2 Air Monitoring

During the processing activities, US Technology and their subcontractors will be encouraged to evaluate oxygen-deficient atmospheres that may be at levels that pose a health threat to on-site workers and observers. Exact monitoring locations and time periods will be determined in the field, based on the judgment of US Technology and/or their subcontractors. Real-time air monitoring for carbon monoxide, as a result of the processing equipment and dump trucks entering the facility, may be met by installing carbon monoxide detectors in the SBM processing, stockpile and loading areas and monitoring the readings.

Table 4-1: Personal Protective Equipment (PPE) Requirements

Task No.(s)	Level of Protection	Level if Upgrade	PPE Suit	PPE Gloves	PPE Feet	PPE Head	PPE Eye	PPE Ear	PPE Resp.	Additional PPE for Upgrade
2-8	Level D Non-Operational	Level C Operational & Sampling	Std	W/N*	Steel	HH	Glasses	Plugs**	N/A	N95 or Half-face APR with HEPA cartridges, Tyvek coveralls, boot covers, inner gloves
6-8	Level C Operational & Sampling	Level B Operational	Std	W/N*	Steel	HH	Glasses	Plugs**	N95 or Half-face APR with HEPA cartridges	Full APR with HEPA cartridges

Personal Protective Equipment (PPE):

SUIT:
Std = Standard work clothes
Tyvek = Uncoated Tyvek disposable coverall
PE Tyvek = Polyethylene-coated Tyvek
Saranex = Saranex-laminated Tyvek
PVC Suit = PVC raingear

GLOVES:
W = Work gloves (canvas, leather)
Neo = Neoprene gloves
PVC = PVC gloves
N = Nitrile gloves
V = Vinyl gloves
L = Latex gloves

Personal Protective Equipment (PPE):

FEET:
Steel = Steel-toe boots
Steel+ = Steel-toe PVC boots
Booties = PVC booties

HEAD:
HH = Hardhat

EYE:
Glasses = Safety glasses
Goggles = Goggles
Shield = Face shield

EAR:
Plugs: Earplugs
Muff: Ear muff

Personal Protective Equipment (PPE):

RESPIRATOR:
N95 = N95 dust mask rated to 0.3 microns
APR = Air purifying respirator
Full APR = Full face APR
Half APR = Half face APR
PAPR – Positive air purifying respirator
SAR = Airline supplied air respirator
SCBA = Self-contained breathing apparatus
Escape = Escape SCBA
OV = Organic Vapor cartridge
AG = Acid gas cartridge
OV/AG = Organic vapor/Acid gas cartridge
AM = Ammonia cartridge
Dust/mist = Dust/mist pre-filter and cover for cartridge
HEPA = High efficiency particulate air filter cartridge

OTHER:
* = Use if contact with wet materials
** = Optional use except if specific hazard present

TASKS:

1. Mobilize to site.
2. Background soil sample collection and field screening.
3. Coordinate/setup staging area and exclusion zone.
4. Coordinate/setup contamination reduction and support zones.
5. Process equipment installation.
6. Process equipment operation – treatment, stockpiling, and hauling.
7. SBM sampling.
8. Site restoration, post-processing sampling and field screening.
9. Demobilization.

.

4.3 Site Zones/Delineation

Exclusion Zone:

__X__ Areas within barricades, cones and/or caution tape

__X__ Within 40-ft radius of heavy equipment operations

__X__ Within SBM storage, processing, stockpiling and loading areas

____ Other (describe):

Contamination Reduction Zone:

__X__ To be determined prior to processing startup

____ Other (describe):

Support Zone:

__X__ To be determined prior to processing startup, but outside of the facility

____ Other (describe):

4.4 Site Communication

____ By two way radio

__X__ By telephone

____ By pager

__X__ By other means (describe): verbal and hand signals

Notes: All personnel will carry cell phones.

5.0 SITE OPERATING PROCEDURES

5.1 Initial Site Mobilization Procedures

- All personnel will have cell phones on site.
- Post Emergency Information: Confirm/post emergency phone numbers and hospital route.
- Designate at least one vehicle for emergency use.
- Provide a chemical toilet and hand washing facilities or have a vehicle available (not the emergency vehicle) for transport to nearby facilities.
- Prior to working on-site, conduct an inspection for physical and chemical hazards.
- Conduct or review utility clearance prior to start of work, if appropriate.
- Note any specialized protocols particular to work tasks associated with the project.

5.2 Daily Operating Procedures

- Hold daily Tailgate Safety Meetings prior to work start.
  See Attachment 5 for Tailgate Safety Meeting Form.
- Use monitoring instruments as necessary and follow designated protocol and contaminant action levels.
- Use personal protective equipment (PPE) as specified.
- Establish a work/rest regime when ambient temperatures and protective clothing create a potential heat/cold stress hazard.
- Do not carry cigarettes, gum, etc. into contaminated areas.
- Refer to US Technology Field Supervisor/SSO for specific concerns for each individual site task.
- Always employ the buddy system.
- Be alert to your own physical condition. Watch buddy for signs of fatigue, exposure, etc.
- All accidents, no matter how minor, must be reported immediately to the US Technology Field Supervisor/SSO.

6.0 EMERGENCY RESPONSE PLAN

6.1 Emergency Incident Procedures

If an emergency incident occurs, take the following actions:

Step 1: Notify the US Technology Field Supervisor/SSO and assess the situation based on available information.

Step 2: As necessary, request assistance from outside sources and/or allocate personnel and equipment resources for response.

Step 3: Survey and assess existing and potential hazards.

Step 4: As appropriate, evacuate site personnel and nearby public and contain hazard.

Step 5: Prepare incident report. The US Technology Field Sampling Supervisor/SSO is responsible for their employees and for the incident report's preparation.

6.2 Emergency Injury Procedures

If an injury occurs, take the following actions:

Step 1: Get medical attention for the injured person immediately.

Step 2: Notify the US Technology Field Supervisor/SSO.

Step 3: Notify the injured person's Human Resources office.

Step 4: Prepare the injury report. The US Technology Field Sampling Supervisor/SSO is responsible for their employees and for the incident report's preparation.

Step 5: The US Technology Field Supervisor/SSO will assume charge during a medical emergency.

6.3 Emergency Telephone Numbers

TITLE	NAME	TELEPHONE NUMBER
Police Department	Hermann Police Department	911 or (573) 486-2081
Fire Department	Hermann Fire Station 2	911 or (573) 486-5618
Ambulance	Ambulance Service	911
Hospital	Hermann Area District Hospital 509 West 18th Street Hermann, MO 65041	(573) 486-2191
US Technology Treatment & Disposal Project Manager	Raymond Williams	[redacted] Ex. 6 PII
US Technology Alternate Contacts	Robert Putnam Robert Harris	
US Technology Field Supervisor/Site Safety Officer	TBD	
Gredell Engineering CA/FO Project Manager	Rickie Roberts, P.E.	(417) 890-6200 (W) [redacted] Ex. 6 PII
Gredell Engineering Field Sampling Supervisor	Travis A. Doll, R.G., R.E.H.S.	(573) 659-9078 (W) [redacted] Ex. 6 PII
Gredell Engineering Alternate Field Sampling Staff	Kat Brookshire, E.I.	(573) 659-9078 (W) [redacted] Ex. 6 PII
Gredell Engineering Alternate Field Sampling Staff	Andrew Rackers, P.E.	(573) 659-9078 (W) [redacted] Ex. 6 PII

6.4 Hospital Name/Address/Route

Name: Hermann Area District Hospital at 509 West 18th Street; located approximately 6.7 miles from the site; approximate driving time 15 minutes from the site. (See hospital route map on the following page)

From Site

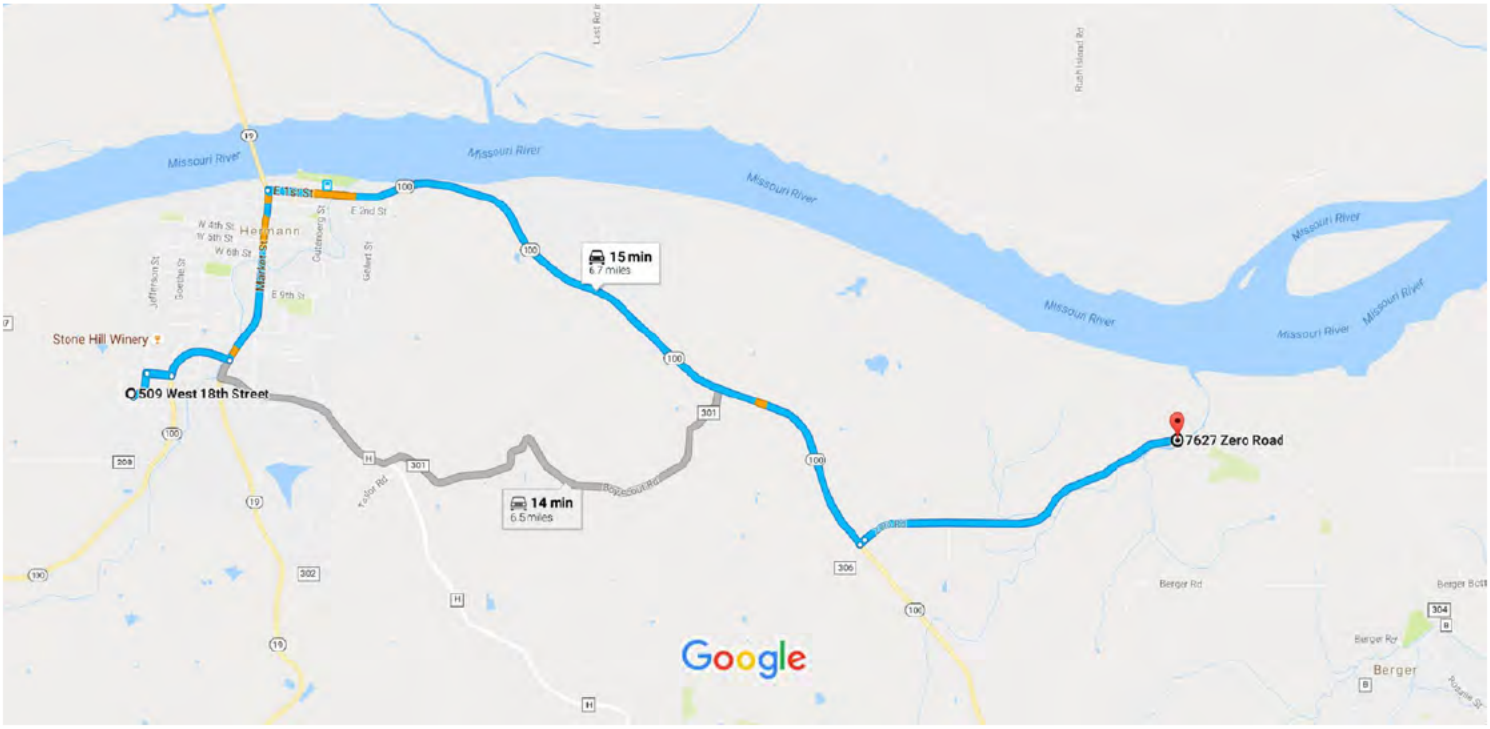
1. Navigate south from work area within site to Zero Road.
2. Turn right (west) onto Zero Road.
3. Travel southwest approximately 1 mile to MO-100 West.
4. Turn right (north) onto MO-100 West, then travel 3.6 miles.
5. Turn left (south) onto Market Street, then travel 0.9 miles.
6. Turn right (west) onto 14th Street, then travel 0.3 miles.
7. Turn right (west) onto West 16th Street, then travel 0.1 miles.
8. Turn left (south) at the first cross street onto Jefferson Street, then travel 443 feet.
9. Turn right (west) onto Hospital Road, then travel 318 feet to Herman Area District Hospital.

Google Maps

509 West 18th Street, Hermann, MO 65041 to 7627 Zero Rd, Berger, MO 63014

Drive 6.7 miles, 15 min

HOSPITAL ROUTE FROM WORK SITE



Map data ©2016 Google 2000 ft

ATTACHMENT 1

US Technology
Site Specific Safety Information
(To be added during process equipment installation)

ATTACHMENT 2

Personnel Responsibilities

PERSONNEL RESPONSIBILITIES

TITLE	GENERAL DESCRIPTION	SPECIFIC RESPONSIBILITIES
US Technology Project Manager	• Reports to upper-level management. • Has authority to direct response operations • Assumes total control over site activities.	• Prepares and organizes the background review of the job at hand, the Work Plan, the Health and Safety Plan, and the field team. • Obtains permission for site access and coordinates activities with appropriate officials. • Ensures that the work plan is completed and on schedule. • Briefs the field teams on their specific assignments. • Uses the Site Safety Officer to ensure that safety and health requirements are met. • Prepares the final report and support files on the response activities. • Serves as the liaison with public officials.
US Technology Field Supervisor/Site Safety Officer	• Advises the Project Manager on all aspects of health and safety on-site. • Recommends stopping work if any operations threaten worker or public health and safety. • Responsible for field team operations and safety. • Reports to Project Manager.	• Coordinates safety and health program activities. • Monitors site personnel for signs of stress, such as cold exposure, heat stress and fatigue. • Monitors on-site hazards and conditions. • Participates in the implementation of the Health and Safety Plan. • Ensures that protective clothing and equipment are properly stored and maintained. • Knows emergency procedures, evacuation routes and the telephone numbers of the ambulance, local hospital, poison control center, fire department and police department. • Notifies, when necessary, local public emergency officials. • Coordinates emergency medical care. • Manages field operations. • Executes the Work Plan and schedule. • Enforces safety procedures. • Coordinates with the Project Manager in determining protection level. • Enforces site control. • Documents field activities and sample collection. • Serves as liaison with public officials.
Team Members	• Reports to Field Supervisor/Site Safety Officer.	• Coordinates with the Field Supervisor/Site Safety Officer in determining protection level. • Safely completes the on-site tasks required to fulfill the Work Plan. • Complies with the Health and Safety Plan. • Notifies the Field Supervisor/Site Safety Officer of unsafe conditions.

ATTACHMENT 3

Worker Training Certifications

U.S. ENVIRONMENTAL PROTECTION AGENCY

This certifies that

RICK ROBERTS

has completed the

PERSONNEL PROTECTION AND SAFETY (165.2)

Training Course

2.1 Continuing Education Units

Columbia, Missouri

March 26 - 30, 1990

Presented by the

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE

Course Director

Training Coordinator,
Environmental
Response Branch

40-HOUR HAZWOPER CERT

Certificate of Completion

Rickie Roberts

has successfully completed the following course

OSHA 10 Hour Construction Program [2009 Rev 1]

This course is approved for 10 continuing education credit hours.

This RedVector certificate is not your official OSHA 10 Hour Construction student completion card; it is provided only as proof that you took the course until you get your official completion card in the mail from the Department of Labor.

Not Applicable

Course Approval

Thursday, August 26, 2010

Course Completion Date

Ryan Sparks, VP of Content Development

RedVector.com
AIA Registered Provider # J315
FL DBPR Approved Provider # 0001771
FBPE Approved Provider # 33

RedVector
Online Education for Design and Construction

Two Urban Centre • 4890 West Kennedy Boulevard Suite 740 • Tampa, FL 33609

American Red Cross

Rickie Roberts

has successfully completed requirements for

Adult First Aid/CPR/AED: valid 2 Years

Ex. 6 PII

Date Completed: 05/11/2016

conducted by: American Red Cross

Instructor: Maureen T Kuchy

N.J.K. Associates, Inc.

Certificate of Completion

Presented to:

Travis Doll

OSHA 29 CFR 1910.120 (e)

for successful completion of the
40 Hour Hazardous Waste Operations Training Course

March 24-27, 1998

Nancy J. Kepko
President

Certificate of Completion

Travis Doll

has successfully completed the following course

HAZWOPER 8 Hour Refresher

Victoria Zambito, VP of Product Management

10/6/2016 5:42:12 PM

Course Completion Date

RedVector.com
Two Urban Centre
4890 West Kennedy Boulevard Suite 740
Tampa, FL 33609

RedVector®
Leaders in Online Education & Training

2c72d607-f61b-4d3e-8849-4c221bd946b1

Certificate of Completion

Travis Doll

has successfully completed the following course

OSHA 10 Hour Construction Program [2009 Rev 1]

This course is approved for 10 continuing education credit hours.

This RedVector certificate is not your official OSHA 10 Hour Construction student completion card; it is provided only as proof that you took the course until you get your official completion card in the mail from the Department of Labor.

Not Applicable

Course Approval

Monday, September 14, 2009

Course Completion Date

Victoria Zambito

Victoria Zambito, VP of Content Development

RedVector.com
AIA Registered Provider # J315
FL DBPR Approved Provider # 0001771
FBPE Approved Provider # 33

RedVector
Online Education for Design and Construction

Two Urban Centre • 4890 West Kennedy Boulevard Suite 740 • Tampa, FL 33609

Certificate of Completion

Presented to:

TRAVIS DOLL

On 10/21/2013, TRAVIS DOLL successfully completed the OSHA 30 Hour Outreach Training for the Construction Industry.

Taylor Alan Sikes

OSHA TRAINING INSTITUTE EDUCATION CENTER

USF UNIVERSITY OF SOUTH FLORIDA

American Safety Council .com

OSHA Authorized Trainer

As an OSHA authorized trainer, I verify that I have conducted this OSHA outreach training class in accordance with OSHA Outreach Training Program requirements. I will document this class to my authorizing OSHA training organization. Upon successful review of my documentation, I will provide each student their completion card within 90 days of the end of the class.

American Red Cross

Travis Doll

has successfully completed requirements for

Adult and Pediatric First Aid/CPR/AED: valid 2 Years

Date Completed: 06/17/2016

conducted by: American Red Cross

Instructor: Maureen T Kuchy

Ex. 6 PII

VIVA Environmental, Inc.

Certifies that

Katherine Brookshire

Has successfully completed the

Hazardous Materials Technician and
Waste Site Worker 8-hour HAZWOPER Refresher
Pursuant to OSHA 29 CFR 1910.120

June 24th, 2016

Instructor
Michael Russo

Peter Felix III, O.H.S.T.
President/CEO

Conducted By:

VIVA
Environmental, Inc.
The Future Is Clear!

Certificate of Training (48)

U.S. Department of Labor
Mine Safety and Health Administration

Approved OMB Number 1219-0009, Expires January 31, 2018.

This certificate is required under Public Law 91-173 as amended by Public Law 95-164. Failure to comply may result in penalties and other sanctions as provided by sections 108 and 110, Public Law 91-173 as amended by Public Law 95-164.

➡ Issue Certificate Immediately Upon Completion of Training

Serial Number (for operator's use)

1. Print Full Name of Person Trained (first, middle, last)

Katherine Jean Stockdale Brookshire

2. Check Type of Approved Training Received:

- [X] Annual Refresher
- [ ] Experienced Miner
- [ ] Hazard Training
- [ ] New Task (specify below)
- [ ] Newly Employed, Inexperienced Miner
- [ ] Other (specify)

Date	Task	Initials (Instr / Studt)	Date	Task	Initials (Instr / Studt)

3. Check Type of Operation and Related Industry:

- A. [X] Surface [ ] Construction [X] Underground [ ] Shaft & Slope
- B. [X] Coal [X] Metal [X] Nonmetal

4. Date Training Requirements Completed

2/16/16 9 hrs

[ ] Check if not completed and go to item 5, below. 9HR

➡ If completed, go to item 6, below.

5. Check Subjects Completed (use only for partially completed training):

- [ ] Introduction to Work Environment
- [ ] Hazard Recognition
- [ ] Emergency Medical Procedures
- [ ] H&S Aspects of Tasks Assigned
- [ ] Statutory Rights of Miners
- [ ] Self-Rescue & Respiratory Devices
- [ ] Transport & Communication Systems
- [ ] Roof/Ground Control & Ventilation
- [ ] Mine Map; Escapeways; Emergency Evacuation; Barricading
- [ ] Cleanup; Rock Dusting
- [ ] Mandatory Health & Safety Standards
- [ ] Authority & Responsibility of Supervisors & Miners' Representatives
- [ ] Health
- [ ] Electrical Hazards
- [ ] First Aid
- [ ] Mine Gases
- [ ] Explosives
- [ ] Prevention of Accidents
- [ ] Other (specify)

6. **False certification is punishable under section 110 (a) and (f) of the Federal Mine Safety & Health Act (P. L. 91-173 as amended by P. L. 95-164).**

I certify that the above training has been completed (signature of person responsible for training)

[redacted] Ex. 6 PII

7. Mine Name, ID, & Location of Training (if institution, give name & address)

Arcades
Phoenix, AZ

ARIZONA STATE MINE INSPECTOR
1700 W WASHINGTON ST. SUITE 403
PHOENIX, AZ 85007

8. Date 2/16/16

I verify that I have completed the above training (signature of person trained)

Katherine Jean Stockdale Brookshire

MSHA Form 5000-23, May, 13 (revised) Copy 2 - Employee's Record Copy

AdvanceOnline Solutions Online Institute

Certificate of Completion

Katherine Stockdale

has met the online course completion requirements for

OSHA 10-Hour Construction Safety

This student has completed the formal instruction for the 10-Hour Construction Outreach Program. Topics covered in this program were Introduction to OSHA, Struck and Caught Hazards, Electrical Safety, Excavation Safety, Fall Protection, Crane Safety, Ladder Safety, Materials Handling, Permit-Required Confined Spaces, Personal Protective Equipment, and Scaffold Safety.

Certificate ID: [redacted] Ex. 6 PII
Instructor: Rick Gleason
Continuing Education Units: 1.0

Date: 1/4/2015 11:42:00 AM
Time Online: 14:35:21

AdvanceOnline Solutions Inc. has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102, (703) 506-9275.

AUTHORIZED IACET PROVIDER

AdvanceOnline Solutions, Inc.
2400 Augusta Drive, Suite 465
Houston, Texas 77057
www.advanceonline.com
Phone: (713) 621-1100

AdvanceOnline SOLUTIONS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

This Certifies that

Andrew Rackers

[redacted] Ex. 6 PII

has satisfactorily completed 40 hours of
Hazardous Waste Operations and Emergency Response for Site Workers
[per 29 CFR 1910.120 (e)(3)(i)]
hosted by
Missouri Department of Natural Resources – Jefferson City, MO
March 7 – 11, 2011

Joseph G. Davis, EPA Training Coordinator

EPA Region 7

Certificate of Completion

Andrew Rackers

has successfully completed the following course

HAZWOPER 8 Hour Refresher

Victoria Zambito, VP of Product Management

5/1/2015 5:25:38 PM

Course Completion Date

RedVector.com
Two Urban Centre
4890 West Kennedy Boulevard Suite 740
Tampa, FL 33609

RedVector®
Leaders in Online Education & Training

#122a602-a732-4171-bd7e-c0fa9d67c72(

Certificate of Completion

Andrew Rackers

has successfully completed the following course

OSHA 10 Hour Construction Program [V14.1]

This course is approved for 10 continuing education credit hours.

This RedVector certificate is not your official OSHA 10 Hour Construction student completion card; it is provided only as proof that you took the course until you get your official completion card in the mail from the Department of Labor.

4/28/2015 11:35:53 AM

Course Completion Date

Course Approval

Victoria Zambito, VP of Product Management

RedVector.com
AIA Registered Provider #J315
FL DBPR Approved Provider #0001771
FBPE Approved Provider #33

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7122ac02-a732-4171-bd7e-c0fafd67c72f

American Red Cross

Certificate of Completion

Andrew Rackers
has successfully completed requirements for

Adult First Aid/CPR/AED - valid 2 Years

conducted by
American Red Cross

Date Completed: **05/11/2016**
Instructors: **Maureen T Kuchy**

Ex. 6 PII

ATTACHMENT 4

Daily Safety Record Form

ATTACHMENT 4
DAILY SAFETY RECORD FORM

PROJ. NAME: W&B of Franklin County – SBM Treatment & Disposal Work Plan DATE: _____

PROJ. NUMBER: _____ COMPLETED BY: _____

	WORK LOCATION			
Location Identifier				
Time Interval at Location				
Maximum Carbon Monoxide Readout (ppm) in Airspace				
Typical Carbon Monoxide Readout (ppm) Range (circle)	ND 1-5 6-35 36-50 51+	ND 1-5 6-35 36-50 51+	ND 1-5 6-35 36-50 51+	ND 1-5 6-35 36-50 51+
Hazard Group Assessment (circle all that apply)	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
Level of PPE worn (circle all that apply)	D C B A	D C B A	D C B A	D C B A

ND = No Detection

Hazard Group	Description
Group 0	No contact with hazardous substances is expected during this work activity. No construction hazards are immediately adjacent to the work area. No specific level of protection is required except for normal work/street clothes.
Group 1	No contact with hazardous substances is expected during this work activity. Construction hazards are immediately adjacent to the work area. Level D protection would likely be appropriate.
Group 2	Contact with "low" levels of hazardous substances is expected during this work activity. Construction hazards are immediately adjacent to the work area. Level D protection may be appropriate.
Group 3	Contact with "moderate" levels of hazardous substances is expected during this work activity. Construction hazards are immediately adjacent to the work area. Level D protection may be appropriate. Possible upgrade to a corresponding Level C protection.
Group 4	Contact with "high" levels of hazardous substances are expected during this work activity or contact with contaminated liquids is possible. Construction hazards are immediately adjacent to the work area. Level C protection may be appropriate. Possible upgrade to a corresponding Level B or Level A protection.

CHECK (√) THE FOLLOWING AFTER COMPLETION

☐ Daily Safety Meeting Time _____

Comments: _____

☐ Instrument Calibration

Instrument _____ Time _____ ☐ Calibration Check ☐ Battery Check

Instrument _____ Time _____ ☐ Calibration Check ☐ Battery Check

Instrument _____ Time _____ ☐ Calibration Check ☐ Battery Check

Comments (Field Deviations, Incidents, Visitors On Site, Etc.):

ATTACHMENT 5

Tailgate Safety Meeting Form

ATTACHMENT 5

TAILGATE SAFETY MEETING FORM
ENVIRONMENTAL HEALTH AND SAFETY

Project Name: W&B of Franklin County – SBM T&D Work Plan Project Type (Circle One): Ph I/II EA UST/AST

Location: 7627 Zero Rd., Berger, Missouri Transfer Station Landfill Facility Mining

Date/Time of Arrival: _____ Geotechnical (Other) Acc. Hazardous Waste

Field Personnel Name(s) and affiliations: _____

_____

ASSESSMENT OF POTENTIAL PHYSICAL HAZARDS

Underground/Overhead Utilities present? Y ___ N ___

Located/Marked? Y ___ N ___

Open Excavations present? Y ___ N ___

Water Hazards present (i.e. lakes, ponds, rivers, creeks)? Y ___ N ___

Winter Hazards (e.g., snow, ice) present? Y ___ N ___

Traffic near or on site? Y ___ N ___

Excessive Noise Potential? Y ___ N ___

Are Slip/Trip Hazards present? Y ✓ N ___

Is there a potential for exposure to Radiation (nuclear density gauge, radioactive waste, ordnance)? Y ___ N ___

Is there a risk from fire or explosion? Y ___ N ___

ASSESSMENT OF BIOLOGICAL HAZARDS

Is there the potential for poisonous vegetation to be present (e.g. poison ivy)? Y ____ N ___

Are there locust trees, briars, or other thorny vegetation present? Y ___ N ___

Could snakes, rodents, bees, wasps and similar pests be encountered? Y ✓ N ___

Could dogs, cattle, feral pigs, or other large mammals be encountered? Y ✓ N ___

Other _____

ASSESSMENT OF CHEMICAL HAZARDS

Are known hazardous substances on site? Y ✓ N ___

Are known reactive or unstable substances present? Y ___ N ✓

Will sample containers be used that contain acid/base preservatives? Y ___ N ___

Is there a potential for an Oxygen deficient atmosphere (i.e. confined spaces, excavations)? Y ✓ N ___

Could unknown or potentially hazardous substances be encountered on site? Y ___ N ___

Are discarded drums, containers or metallic debris on site? Y ✓ N ___

Is there a risk from fire or explosion? Y ✓ N ___

SIGNATURE

_____

PRE-MOBILIZATION

Field Schedule provided to Manager? Y ___ N ___

On Site & Emergency phone numbers attached? Y ✓ N ___

Hospital Route Map attached? Y ✓ N ___

Is this a Subsurface Project? Y ___ N ___

If so, has a Utility Locate been performed? Y ___ N ___

Appropriate PPE Required List Type

Hard Hat ___ Steel-Tip Boots ___

Ear Plugs ___ Safety Glasses ___

Respirator ___ Tyvek Suit ___

Other (Specify) _____

First Aid Kit & Fire Extinguisher available? Y ___ N ___

Drinking Water available? Y ___ N ___

Appropriate Clothing worn for Project/Weather? Y ___ N ___

Is Air Monitoring a requirement of this project? Y ___ N ___

Confined Space Entry Permit Required? Y ___ N ___

Does the work require use of Field Equipment such as Hand Augers or Soil Probes? Y ___ N ___

Does the work require site control and/or site security such as Barricades or perimeter Flagging/Staking? Y ___ N ___

INITIAL MOBILIZATION CHECKLIST

Weather Conditions (Circle two):

Sunny Cloudy Rain Snow

Temp: Hot (>80) Mild (45-80) Cold (<45)

Ground Conditions (circle one): Dry Muddy Ice/Snow

General Site Description (circle all applicable):

Paved Surface Construction Area (Indoor)

Rural Pasture/Rangeland Wooded

Heavy Equipment Present/Operating on site? Y ✓ N ___

Are Subcontractors on site or scheduled to be on site? Y ___ N ___

If so, has a Tailgate Safety Meeting been performed? Y ___ N ___

Are individuals other personnel or their Subcontractors on site? Y ___ N ___; Approximate number? _____

NOTES/COMMENTS

_____

_____

_____

ATTACHMENT 6

Cleaning & Disinfecting Guidelines For Bird, Bat, and Rodent Droppings

Cleaning & Disinfecting Guidelines
For Bird, Bat, and Rodent Droppings

This is a guideline for using Sporicidin® Disinfectant products in the cleaning and disinfecting of surfaces and materials contaminated with fecal matter from birds, bats and rodents. This guideline is not applicable for the remediation of dirt floors, such those found in crawlspaces or farm structures like coops and barns. Sporicidin® Disinfectant products are intended for use in this guideline for the cleaning and removal of feces, urine, and other contamination from porous and non-porous surfaces or materials, and the disinfection of hard, non-porous surfaces. To date, the EPA has approved only Formaldehyde for the disinfecting of dirt and soil. However, the health risks to workers and occupants, along with the need for extensive protective measures, negate the use of Formaldehyde for remediation purposes.

Cleanup projects of this nature are dangerous, requiring proper attire and safety equipment to prevent cleaning personnel from contracting life-threatening illnesses. **Table 1** depicts some of the diseases that workers can be exposed to via respiratory, ingestion and direct contact with contaminated materials and surfaces.

Disease	Pathogen	Classification	Infectious Hazard
Histoplamsosis	*Histoplasma capsulatum*	Fungal	Bird & bat feces
Cryptococcosis	*Cryptococcus neoformans*	Fungal	Bird feces
Psittacosis	*Chlamydophila psittaci*	Bacterial	Bird feces
Rabies	*Rabies virus*	Viral	Bat & rodent carcasses
Hantavirus pulmonary syndrome	*Hanta virus*	Viral	Rodent feces & urine
Leptospirosis	*Leptospira ssp.*	Bacterial	Rodent feces & urine
Lymphocytic Choriomeningitis	*Lymphocytic choriomeningitis virus*	Viral	Rodent feces & urine

Table 1 – Potential Health Hazards

TRAINING

Employees should be trained and experience in hazardous/infectious material cleaning, removal and disposal procedures, as well as be physically and mentally capable of working in close quarters or confined spaces, while wearing protective clothing and equipment for extended periods of time.

RECOMMEDED PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personnel performing clean up operations of this nature should protect themselves with the following PPE:

- Full face respirator with HEPA filter cartridge
- Tyvek suit or other protective clothing
- Rubber boots
- Rubber gloves

RECOMMENDED TOOLS

- Shovels or other scraping tools
- Tongs for picking up animal carcasses
- Misting devices, such as ULV fogger or airless sprayer
- Mops & buckets
- Trigger sprayers (for applying disinfectants)

P.O. Box 530
Spartanburg, SC 29304
ph: 864-503-8333
toll free: 1-800-424-3733
fax: 864-503-8444
sporicidin@contecinc.com
www.sporicidin.com
www.contecinc.com

RECOMMENDED CLEANING SUPPLIES

- Scrub brushes, sponges, pads or cloths for cleaning surfaces
- Paper towels or wipes
- Black heavy-duty leaf/trash bags
- Biohazard/Infectious materials tape

RECOMMENDED SPORICIDIN PRODUCTS

- Sporicidin® Disinfectant Solution (gallons or 22 oz. Bottle)
- Sporicidin® Disinfectant Towelettes (canister)
- Sporicidin® Antimicrobial Lotion Soap (for use as personnel hand wash)
- Sporicidin® Enzyme Mold Stain Cleaner or Enzymatic Cleaner (may be used as a cost effective cleaning detergent solution)

SITE PREPARATION & ENGINEERING CONTROLS

Proper planning and preparation is essential in order to safely and effectively remediate these type of clean up projects. Care must be taken to prevent contamination of clean up personnel and occupants, as well as prevent the spread of contamination inside and outside the structure during the clean up.

Warning Signs

Highly visible warning signs should be posted at entry ways to prevent unauthorized or unprotected personnel from entering the contaminated area.

Removal of Live Pests

Any live pests should be removed from the premises prior to starting the project. In the case of bats, it is advisable to request removal by your local animal control agency or hire a pest removal specialist. Once the pests have been vacated, steps should be immediately taken to seal up all possible points of entry that pests may have used and prevent future intrusion.

Removal of Carcasses and Nesting Materials

Pest carcasses should be removed using tongs or similar devices to minimize contamination of PPE and placed into double-bagged plastic trash bags. Vacant nests or nesting materials should be carefully removed to prevent contamination from becoming airborne and placed in double-bagged trash bags then sealed with tape. Bagged material should be clearly labeled as infectious materials and disposed of in accordance with local requirements for infectious waste.

HVAC Systems

Any HVAC vents or air supply vents should be sealed to prevent further cross-contamination of the air supply system and consideration given to having the vent system professional cleaned as the final step of the remediation process.

PROCEDURES FOR CLEANING AND DISINFECTION

All surfaces and materials within the affected area should be pre-cleaned to remove gross filth and fecal matter, followed by thorough disinfection with Sporicidin® Disinfectant Solution, Disinfectant Spray or Disinfectant Towelettes. Porous material, such as insulation, cannot be easily cleaned and may require removal and replacement. Sporicidin® Disinfectant Solution can be applied to surfaces with saturated towels or sponges, as well as by misting with a mechanical device, such as a ULV fogger, airless sprayer, pressure sprayer or trigger sprayer. Fogging may be done as an adjunct to disinfecting large areas or rooms (See Sporicidin® EPA-approved Fogging Bulletin #301).

REMOVAL OF GROSS FECAL MATTER

To suppress and prevent fungal and bacterial spores from becoming airborne during the removal of heavy contamination, the fecal matter can be lightly misted with Sporicidin® Disinfectant Solution or Sporicidin® Enzyme Mold Cleaner using ULV foggers or airless sprayers. Once contaminantes are thoroughly dampened, scoop or scrape the debris up and place into double-bagged trash bags and seal with tape. Re-dampen the fecal matter as needed until all gross filth has been removed.

CLEANING OF SURFACES & MATERIALS
Once all fecal matter has been removed, all surfaces and materials should be thoroughly disinfected by saturating with Sporicidin® Disinfectant and allowed to remain wet for at least 10 minutes, then wiped clean and air dried.

Synthetic carpets, rugs, curtains and upholstery – To clean manually, spray Sporicidin® Disinfectant onto carpet or fabric and wipe clean with cloth or sponge. For machine cleaning, apply product in accordance with machine manufacturer's guidelines. **Natural fabrics, rugs, curtains and upholstery** – Clean in accordance with manufacturer's guidelines.

Clothing, linens and other personal fabrics – Launder contaminated articles per garment label instructions.

NOTE: Laundry machines should be disinfected after washing contaminated materials by spraying the tub, agitator, splash seal and surfaces with Sporicidin® Disinfectant Solution and allowed to remain wet for 10 minutes, then wiped clean and allowed to air dry.

Tanned leather materials – Clean materials by wiping the surfaces with a cloth lightly moistened with Sporicidin® Disinfectant Solution or Sporicidin® Disinfectant Towelettes, and allow to air dry.

Suede and Nu-buck leather material – Clean according to manufacturer's guidelines.

Concrete, cinder block, wood, plywood and oriented strand board (OSB) – Apply Sporicidin® Disinfectant Solution directly to the surface and allow to remain wet for 10 minutes, followed by wiping clean and allow to air dry.

HVAC SYSTEM
HVAC internal duct surfaces and components should be cleaned in accordance with industry guidelines. External ductwork surfaces, grills, grates and registers should be cleaned and disinfected with Sporicidin®.

DISINFECTION OF EQUIPMENT, TOOLS & PERSONAL PROTECTIVE EQUIPMENT (PPE)
All tools, equipment and individual personal protective equipment used in the clean up of contaminated areas should be cleaned and disinfected using Sporicidin® prior to removal from the contaminated area. Used respirator HEPA filters should be treated as infectious materials and disposed of accordingly (see DISPOSAL OF INFECTIOUS MATERIALS section below).

DISPOSAL OF INFECTIOUS MATERIALS
Soiled cleaning materials, such as paper towels, cloths, sponges and mop heads, should be placed in double-bagged trash bags, sealed with duct tape, labeled and disposed of as infectious materials in accordance with local requirements. Sporicidin® products can be disposed of by pouring the liquid down the regular sewer drain and discarding the empty container in the regular trash. Follow local regulations.

For additional information contact our office at 1-800-474-3733 or visit our website at www.sporicidin.com.

P.O. Box 530
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www.contecinc.com

ATTACHMENT 7

Safety Data Sheets

Health	3
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Cadmium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cadmium

Catalog Codes: SLC3484, SLC5272, SLC2482

CAS#: 7440-43-9

RTECS: EU9800000

TSCA: TSCA 8(b) inventory: Cadmium

CI#: Not applicable.

Synonym:

Chemical Name: Cadmium

Chemical Formula: Cd

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cadmium	7440-43-9	100

Toxicological Data on Ingredients: Cadmium: ORAL (LD50): Acute: 2330 mg/kg [Rat.]. 890 mg/kg [Mouse]. DUST (LC50): Acute: 50 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact: No known effect on eye contact, rinse with water for a few minutes.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 570°C (1058°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Non-flammable in presence of open flames and sparks, of heat, of oxidizing materials, of reducing materials, of combustible materials, of moisture.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 112.4 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: 765°C (1409°F)

Melting Point: 320.9°C (609.6°F)

Critical Temperature: Not available.

Specific Gravity: 8.64 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity: Reacts violently with potassium.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 890 mg/kg [Mouse]. Acute toxicity of the dust (LC50): 229.9 mg/m3 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. The substance is toxic to kidneys, lungs, liver.

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: An allergen. 0047 Animal: embryotoxic, passes through the placental barrier.

Special Remarks on other Toxic Effects on Humans: May cause allergic reactions, exzema and/or dehydration of the skin.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification:

Identification:

Special Provisions for Transport:

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cadmium California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Cadmium Pennsylvania RTK: Cadmium Massachusetts RTK: Cadmium TSCA 8(b) inventory: Cadmium SARA 313 toxic chemical notification and release reporting: Cadmium CERCLA: Hazardous substances.: Cadmium

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R26- Very toxic by inhalation. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Chromium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chromium

Catalog Codes: SLC4711, SLC3709

CAS#: 7440-47-3

RTECS: GB4200000

TSCA: TSCA 8(b) inventory: Chromium

CI#: Not applicable.

Synonym: Chromium metal; Chrome; Chromium Metal Chips 2" and finer

Chemical Name: Chromium

Chemical Formula: Cr

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Chromium	7440-47-3	100

Toxicological Data on Ingredients: Chromium LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 580°C (1076°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Moderate fire hazard when it is in the form of a dust (powder) and burns rapidly when heated in flame. Chromium is attacked vigorously by fused potassium chlorate producing vivid incandescence. Pyrophoric chromium unites with nitric oxide with incandescence. Incandescent reaction with nitrogen oxide or sulfur dioxide.

Special Remarks on Explosion Hazards:
Powdered Chromium metal +fused ammonium nitrate may react violently or explosively. Powdered Chromium will explode spontaneously in air.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 (mg/m3) from ACGIH (TLV) [United States] TWA: 1 (mg/m3) from OSHA (PEL) [United States] TWA: 0.5 (mg/m3) from NIOSH [United States] TWA: 0.5 (mg/m3) [United Kingdom (UK)] TWA: 0.5 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 52 g/mole

Color: Silver-white to Grey.

pH (1% soln/water): Not applicable.

Boiling Point: 2642°C (4787.6°F)

Melting Point: 1900°C (3452°F) +/- !0 deg. C

Critical Temperature: Not available.

Specific Gravity: 7.14 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Soluble in acids (except Nitric), and strong alkalies.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Not available.

Special Remarks on Reactivity:
Incompatible with molten Lithium at 180 deg. C, hydrogen peroxide, hydrochloric acid, sulfuric acid, most caustic alkalies and alkali carbonates, potassium chlorate, sulfur dioxide, nitrogen oxide, bromine pentafluoride. It may react violently or ignite with bromine pentafluoride. Chromium is rapidly attacked by fused sodium hydroxide + potassium nitrate. Potentially hazardous incompatibility with strong oxidizers.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause cancer based on animal data. There is no evidence that exposure to trivalent chromium causes cancer in man.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: May cause skin irritation. Eyes: May cause mechanical eye irritation. Inhalation: May cause irritation of the respiratory tract and mucous membranes of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea. Chronic Potential Health Effects: Inhalation: The effects of chronic exposure include irritation , sneezing, reddness of the throat, bronchospasm, asthma, cough, polyps, chronic inflammation, emphysema, chronic bronchitis, pharyngitis, bronchopneumonia, pneumoconoisis. Effects on the nose from chronic chromium exposure include irritation, ulceration, and perforation of the nasal septum. Inflammation and ulceration of the larynx may also occur. Ingestion or Inhalation: Chronic exposure may cause liver and kidney damage.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Chromium Illinois toxic substances disclosure to employee act: Chromium Illinois chemical safety act: Chromium New York release reporting list: Chromium Rhode Island RTK hazardous substances: Chromium Pennsylvania RTK: Chromium Minnesota: Chromium Michigan critical material: Chromium Massachusetts RTK: Chromium Massachusetts spill list: Chromium New Jersey: Chromium New Jersey spill list: Chromium Louisiana spill reporting: Chromium California Director's List of Hazardous Substances: Chromium TSCA 8(b) inventory: Chromium SARA 313 toxic chemical notification and release reporting: Chromium CERCLA: Hazardous substances.: Chromium: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R40- Limited evidence of carcinogenic effect S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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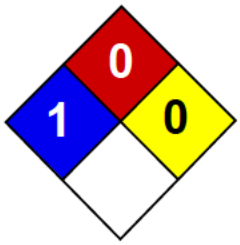

Health	1
Fire	0
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States] TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually abssorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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US TECHNOLOGY Media Inc.
509 Water St. Bolivar, OH 44612
Phone: 330-455-1181 Fax: 330-455-1191

The Magic is the Media

A ISO 9001:2008 – ANSI-ISO-ASQ Q9001-2008 Company

SECTION I

PRODUCT NAME OR NUMBER (as it appears on label) Polyplus® Plastic Blast Abrasive (Type II)	
MANUFACTURER'S NAME U.S. Technology Media Inc.	**EMERGENCY TELEPHONE NO.** (330) 455-1181
ADDRESS (Number, Street, City and Zip Code) 509 Water ST., Bolivar OH. 44612	**DATE PREPARED/REVISED – NO.** September 10, 2015-9
MATERIAL DESCRIPTION, PROPER SHIPPING NAME Plastic Abrasive, Polyplus	
HAZARD CLASSES (as applicable): N.A.	
CHEMICAL FAMILY: Amino Thermoset Plastic	**FORMULA:** N.A.

SECTION II – INGREDIENTS
(list all ingredients)

CAS REGISTRY NO.	Approx. %W	Chemical Name(s)	OSHA PEL	ACGIH TLV	Other Limits Recommended
9004-34-6 9011-05-6	98	Polymerized Urea/Melamine Formaldehyde Compound w/ Alpha Cellulose Filler			
2764-13-8	>1%	Anti-Static Agent – Cal Stat 600			
5280-80-8 13463-67-7 12769-96-9	<2%	Pigments and Additives			

SECTION III – PHYSICAL DATA

BOILING POINT___ºF ___ ºC N.A.	**SPECIFIC GRAVITY (H_2O=1):** 1.47-1.52	**BULK DENSITY** 58-60 lbs./ft^3
MELTING POINT___ºF ___ºC N.A.	**PERCENT VOLATILE BY VOLUME (%)** N.A.	**PERCENT SOLID BY WEIGHT (%)** 100
VAPOR DENSITY (AIR=1) N.A.	**EVAPORATION RATE (=1)** N.A.	
SOLUBILITY IN WATER - Not	**pH=** 4-8	
APPEARANCE AND ODOR: Multi-colored granules with slight plastic odor		**MATERIAL FORM:** Solid

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT ____ ºF ___ ºC: N.A.	**FLAMMABLE:** N.A.	**LEL:** N.A.	**UEL:** N.A.
EXTINGUISHING MEDIA: Carbon dioxide, dry chemicals or water fog			
SPECIAL FIRE FIGHTING PROCEDURES: Do not use high-pressure water stream. Fog nozzles are preferable.			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Maintain normal good housekeeping for control of dust.			

SECTION V – HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE – Conditions to avoid: Mechanical injury to eyes and/or skin can occur. Excessive dust inhalation may be harmful.	**THRESHOLD LIMIT VALUE:** _____ **PERMISSIBLE EXPOSURE LIMIT:** _____
PRIMARY ROUTES OF ENTRY: ☑ **Inhalation** ☑ **Skin Contact** ☐ **Other (specify)**	
EMERGENCY AND FIRST AID PROCEDURES: In case of eye or skin irritation, flush with plenty of water for 15 minutes. Inhalation – remove to fresh air and contact physician if necessary.	

SECTION VI – REACTIVITY DATA

STABILITY: ☑ **STABLE** ☐ **UNSTABLE**	**CONDITIONS TO AVOID:**
INCOMPATIBILITY (Materials to avoid): No specific incompatibility	
HAZARDOUS DECOMPOSITION or BYPRODUCTS: Smoke, carbon dioxide, carbon monoxide, formaldehyde, hydrogen cyanide at +500ºF.	
HAZARDOUS POLYMERIZATION: ☑ **MAY NOT OCCUR** ☐ **MAY OCCUR**	**CONDITIONS TO AVOID:**

SECTION VII – SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove from open flame, sparks, hot surfaces and oxidizing agents. Sweep up and place waste in disposal container.
WASTE DISPOSAL METHOD: Sanitary landfill in accordance with Federal, State and Local regulations.
CERCLA (Superfund) REPORTABLE QUANTITY (in lbs.): N.A.
RCRA HAZARDOUS WASTE NO. (40 CFR 261.33): N.A.
VOLATILE ORGANIC COMPOUND (VOC) (as packaged, minus water): N.A. ☐ **Theoretical** **lbs. /gal.** ☐ **Analytical** **lbs. /gal.**

SECTION VIII – SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type): Where required, use NIOSH/MSHA approved respiratory protection in compliance with OSHA regulations (i.e.1910.134 et. al.).		
VENTILATION	**LOCAL EXHAUST (Specify Rate):** Where necessary to maintain exposure levels to OSHA permissible levels.	
	MECHANICAL (General – Specify Rate): Acceptable	
	SPECIAL: Explosion proof may be necessary if aerated and airveyed.	
	OTHER:	
PROTECTIVE GLOVES (Specify Type): Normal		**EYE PROTECTION (Specify Type):** Safety goggles
OTHER PROTECTION EQUIPMENT: Respirator hood, if necessary.		

SECTION IX – SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in closed, properly labeled containers in cool ventilated area. Keep away from heat, sparks, open flame and oxidizing agents. Do not transfer unmarked containers.
OTHER PRECAUTIONS: None

Prepared by:
Name (print): **Casey Williams**
Title: Quality Assurance Manager
Date Reviewed: September 10, 2015-9

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Material Safety Data Sheet
For
Portland Cement

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company 11011 Cody Overland Park, KS 66210

Emergency Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms: Type I, IA, II, III, V

Revision Date: March 2010 (This revision supercedes all previous versions)

Chemical Family: Calcium Salts

Formula: Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

$3CaO.SiO_2$	(CAS # 12168-85-3)
$2CaO.SiO_2$	(CAS # 10034-77-2)
$3CaO.Al_2O_3$	(CAS # 12042-78-3)
$4CaO.Al_2O_3.Fe_2O_3$	(CAS # 12068-35-8)
$CaSO_4.XH_2O$	(CAS # 13397-24-5)

Small amounts of CaO, MgO, K_2SO_4, Na_2SO_4 may also be present.

Hazardous Components(s):

Substance	CAS Number	OSHA PEL	ACGIH TLV-TWA	MSHA Exposure Limits
Portland Cement – total dust	65997-15-1	15 mg/m^3	1 mg/m^3 (2010) * (Respirable Dust)	10 mg/m^3
Portland Cement - respirable dust	65997-15-1	5 mg/m^3	Not Applicable	Not Applicable
Quartz	14808-60-7	10 mg/m^3 (% silica + 2)	0.025 mg/m^3 (2006) (respirable fraction)	10 mg/m^3 (% silica + 2)

Note: Some portland cements may contain small amounts of crystalline silica (slightly more than 0.1%).
*** Applicable if <1% crystalline silica is present.**

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable.

Solubility in Water: Slight (0.1-1.0%)

pH (in water) (ASTM D 1293-95): 12 - 13

Specific Gravity: (H_2O=1) 2.9 - 3.1

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable. (Although portland cement poses no fire-related hazards, a self-contained breathing apparatus is recommended to limit exposure to combustion products when fighting any fire.)

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin, whether direct or through saturated clothing, can cause severe, third degree caustic burns. **NOTE: Portland cement burns skin with little warning; discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. The severity of the burn may not be detected until several hours after the damage begins.** Dry portland cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry portland cement can cause inflammation of the lining of the nose and the cornea. Repeated exposure to portland cement may result in drying of the skin and may lead to thickening, cracking, or fissuring of the skin. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium at less than 0.005%). This reaction may appear in several forms including a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may experience this effect after years of exposure to portland cement products.

While portland cement typically has less than 0.2% crystalline silica, other additives to portland cement and those components (e.g. aggregates) added to produce portland cement concrete may significantly increase the amount of crystalline silica that is present. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. **Exposure of sufficient duration to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns.** The same kind of destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry portland cement. **DO NOT ALLOW WET PORTLAND CEMENT TO GET INSIDE BOOTS, SHOES, OR GLOVES AND DO NOT ALLOW WET, SATURATED CLOTHING TO REMAIN AGAINST THE SKIN.**

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable quartz silica as reasonably anticipated to be a carcinogen. OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of clean water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with pH-neutral soap and clean water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet portland cement, portland cement mixtures, liquids from fresh portland cement products, or prolonged wet skin exposure to dry portland cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. In the event of inhalation, remove to fresh air. Seek medical attention if coughing and other symptoms do not subside. Inhalation of gross amounts of portland cement requires immediate medical attention.

Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Portland cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Portland cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where portland cement dust or wet portland cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or wet portland cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water. **DO NOT ALLOW WET PORTLAND CEMENT TO GET INSIDE BOOTS, SHOES, OR GLOVES AND DO NOT ALLOW WET, SATURATED CLOTHING TO REMAIN AGAINST THE SKIN.**

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet portland cement in plastic concrete, mortar or slurries.

Work/Hygienic Practices: Periodically wash areas contacted by dry portland cement or by wet portland cement or concrete fluids with a pH neutral soap and clean, uncontaminated water. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet portland cement or concrete, it should be removed and replaced with clean dry clothing. Follow listed precautions as appropriate during repair or maintenance work on contaminated equipment.

Section IX – Transportation Information

Hazardous materials/proper shipping name description:
Portland cement is not hazardous under U.S. Department of Transportation (DOT) regulations.

Hazard class:
Not applicable

Identification number:
Not applicable

Required label text:
Not applicable

Hazardous substances / reportable quantities (RQ)
Not applicable

Section X – Other Regulatory Information

Status under USDOL-OSHA Hazard Communication Standard (29 CFR 1910.1200)
Portland cement is considered a "hazardous chemical" under this regulation and should be a part of any Hazard Communication Program.

Status under CERCLA / Superfund 40 CFR 117 and 302
Not listed.

Status under SARA (Title III), Sections 311 and 312
Portland cement qualifies as a "hazardous substance" with delayed health effects.

Status under SARA (Title III), Section 313
This product may contain constituents listed under SARA (Title III) Section 313, but not in amounts requiring supplier notification under 40 CFR Part 372 Subpart C.

Status under TSCA (as of May 1997)
Portland cement and some of the substances in portland cement are on the TSCA inventory list.

Status under the Federal Hazardous Substances Act
Portland cement is a "hazardous substance" subject to statutes promulgated under the subject act.

Status under California Proposition 65
This product contains crystalline silica and chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the above warning in the absence of definitive testing to prove the defined risks do not exist.

Status under the Canadian Environmental Protection Act
Not listed.

Status under WHMIS
Portland cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class E – Corrosive Material) and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

Other Important Information
Portland cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that portland cement reacts with water, and that some of the intermediate products of this reaction (that is, those present while portland cement is "setting") pose a far more severe hazard than does portland cement itself.

While the information provided in this material safety data sheet is thought to provide a useful summary of the hazards of portland cement as it is commonly used, the sheet cannot anticipate and provide all the information that might be needed in every situation. Inexperienced product users should obtain training before using this product.

In particular, the data provided in this sheet do not address hazards that may be posed by other materials that may be added to portland cement to produce portland cement products. Users should review other relevant material safety data sheets before working with this portland cement or on portland cement products, for example portland cement concrete.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY ASH GROVE CEMENT COMPANY, except that the product shall conform to contracted specifications. The information provided herein was believed by Ash Grove Cement Company to be accurate at the time of preparation or prepared by sources by believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe use and handling of product and to determine the suitability of the product for its intended use.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

DIESEL FUEL No. 2

ICSC: 1561

Fuels, Diesel, No. 2 Diesel oil No. 2 Gasoil - unspecified ICSC # 1561		CAS # 68476-34-6 RTECS # LS9142500 UN # 1202 EC # 649-227-00-2 October 26, 2004 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	Water spray, alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 52°C explosive vapour/air mixtures may be formed.	Above 52°C use a closed system, ventilation, and explosion-proof electrical equipment.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•**INHALATION**	Dizziness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid	Well closed.	

in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Personal protection: filter respirator for organic gases and vapours.		Note: H Xn symbol R: 40 S: 2-36/37 UN Hazard Class: 3 UN Packing Group: III
ICSC: 1561	Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.	

DIESEL FUEL No. 2

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
BROWN SLIGHTLY VISCOUS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:

CHEMICAL DANGERS:

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 100 ppm as TWA; (skin); A3; (ACGIH 2004).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol.

INHALATION RISK:
A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract . The substance may cause effects on the central nervous system. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin.

I A	

PHYSICAL PROPERTIES	Boiling point: 282-338°C Melting point: -30 - -18°C Density: 0.87 - 0.95 g/cm^3 Solubility in water, g/100 ml at 20°C: 0.0005 Flash point: 52°C c.c.	Auto-ignition temperature: 254-285°C Explosive limits, vol% in air: 0.6 - 6.5 Octanol/water partition coefficient as log Pow: > 3.3
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. 	

NOTES

Additives to Diesel fuel in winter may change physical and toxicological properties of the substance. This card does not address Diesel exhaust.

Transport Emergency Card: TEC (R)-30S1202

NFPA Code: H0; F2; R0;

ADDITIONAL INFORMATION

ICSC: 1561 **DIESEL FUEL No. 2**

Page last reviewed: July 22, 2015

Page last updated: July 1, 2014

Content source: Centers for Disease Control and Prevention (http://www.cdc.gov/)

MATERIAL SAFETY DATA SHEET

Gasoline, All Grades **MSDS No. 9950**

EMERGENCY OVERVIEW
DANGER!
EXTREMELY FLAMMABLE - EYE AND MUCOUS MEMBRANE IRRITANT - EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF SWALLOWED - ASPIRATION HAZARD

NFPA 704 (Section 16)

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs). Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

1. CHEMICAL PRODUCT and COMPANY INFORMATION

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

EMERGENCY TELEPHONE NUMBER (24 hrs): **CHEMTREC (800)424-9300**
COMPANY CONTACT (business hours): Corporate Safety (732)750-6000
MSDS (Environment, Health, Safety) Internet Website www.hess.com

SYNONYMS: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS *

INGREDIENT NAME (CAS No.)	CONCENTRATION PERCENT BY WEIGHT
Gasoline (86290-81-5)	100
Benzene (71-43-2)	0.1 - 4.9 (0.1 - 1.3 reformulated gasoline)
n-Butane (106-97-8)	< 10
Ethyl Alcohol (Ethanol) (64-17-5)	0 - 10
Ethyl benzene (100-41-4)	< 3
n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Tertiary-amyl methyl ether (TAME) (994-05-8)	0 to 17.2
Toluene (108-88-3)	1 - 25
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 - 15

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol or MTBE and/or TAME).

Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

3. HAZARDS IDENTIFICATION

EYES
Moderate irritant. Contact with liquid or vapor may cause irritation.

SKIN
Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

INGESTION
The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

INHALATION
Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS and CARCINOGENICITY
Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity. See also Section 11 - Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

4. FIRST AID MEASURES

EYES
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION
Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT:	-45 °F (-43°C)
AUTOIGNITION TEMPERATURE:	highly variable; > 530 °F (>280 °C)
OSHA/NFPA FLAMMABILITY CLASS:	1A (flammable liquid)
LOWER EXPLOSIVE LIMIT (%):	1.4%
UPPER EXPLOSIVE LIMIT (%):	7.6%

FIRE AND EXPLOSION HAZARDS
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain MTBE and/or TAME. Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 “Low Expansion Foam - 1994 Edition.”

FIRE FIGHTING INSTRUCTIONS
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE

HANDLING PRECAUTIONS

******USE ONLY AS A MOTOR FUEL******
******DO NOT SIPHON BY MOUTH******

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

STORAGE PRECAUTIONS

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

8. EXPOSURE CONTROLS and PERSONAL PROTECTION

EXPOSURE LIMITS

Component (CAS No.)	Source	TWA (ppm)	STEL (ppm)	Exposure Limits Note
Gasoline (86290-81-5)	ACGIH	300	500	A3
Benzene (71-43-2)	OSHA	1	5	Carcinogen
	ACGIH	0.5	2.5	A1, skin
	USCG	1	5	
n-Butane (106-97-8)	ACGIH	1000	--	Aliphatic Hydrocarbon Gases Alkane (C1-C4)
Ethyl Alcohol (ethanol) (64-17-5)	OSHA	1000	--	
	ACGIH	1000	--	A4
Ethyl benzene (100-41-4)	OSHA	100	--	
	ACGIH	100	125	A3
n-Hexane (110-54-3)	OSHA	500	--	
	ACGIH	50	--	Skin
Methyl-tertiary butyl ether [MTBE] (1634-04-4)	ACGIH	50		A3
Tertiary-amyl methyl ether [TAME] (994-05-8)				None established
Toluene (108-88-3)	OSHA	200		Ceiling: 300 ppm; Peak: 500 ppm (10 min.)
	ACGIH	20	--	A4
1,2,4- Trimethy benzene (95-63-6)	ACGIH	25	--	
Xylene, mixed isomers (1330-20-7)	OSHA	100	--	
	ACGIH	100	150	A4

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Gloves constructed of nitrile or neoprene are recommended. Chemical protective clothing such as that made of of E.I. DuPont Tychem ®, products or equivalent is recommended based on degree of exposure.

Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION

A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE

A translucent, straw-colored or light yellow liquid

ODOR
A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with MTBE and/or TAME may have a sweet, ether-like odor and is detectable at a lower concentration than non-oxygenated gasoline.

ODOR THRESHOLD

	Odor Detection	Odor Recognition
Non-oxygenated gasoline:	0.5 - 0.6 ppm	0.8 - 1.1 ppm
Gasoline with 15% MTBE:	0.2 - 0.3 ppm	0.4 - 0.7 ppm
Gasoline with 15% TAME:	0.1 ppm	0.2 ppm

BASIC PHYSICAL PROPERTIES

BOILING RANGE:	85 to 437 °F (39 to 200 °C)
VAPOR PRESSURE:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)
VAPOR DENSITY (air = 1):	AP 3 to 4
SPECIFIC GRAVITY (H_2O = 1):	0.70 – 0.78
EVAPORATION RATE:	10-11 (n-butyl acetate = 1)
PERCENT VOLATILES:	100 %
SOLUBILITY (H_2O):	Non-oxygenated gasoline - negligible (< 0.1% @ 77 °F). Gasoline with 15% MTBE - slight (0.1 - 3% @ 77 °F); ethanol is readily soluble in water

10. STABILITY and REACTIVITY)

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

INCOMPATIBLE MATERIALS
Keep away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY
Acute Dermal LD50 (rabbits): > 5 ml/kg
Acute Oral LD50 (rat): 18.75 ml/kg
Primary dermal irritation (rabbits): slightly irritating
Draize eye irritation (rabbits): non-irritating
Guinea pig sensitization: negative

CHRONIC EFFECTS AND CARCINOGENICITY
Carcinogenicity: OSHA: NO IARC: YES - 2B NTP: NO ACGIH: YES (A3)

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

This product may contain methyl tertiary butyl ether (MTBE): animal and human health effects studies indicate that MTBE may cause eye, skin, and respiratory tract irritation, central nervous system depression and neurotoxicity. MTBE is classified as an animal carcinogen (A3) by the ACGIH.

12. ECOLOGICAL INFORMATION

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations. If released, oxygenates such as ethers and alcohols will be expected to exhibit fairly high mobility in soil, and therefore may leach into groundwater. The API (www.api.org) provides a number of useful references addressing petroleum and oxygenate contamination of groundwater.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options.

14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME:	Gasoline
DOT HAZARD CLASS and PACKING GROUP:	3, PG II
DOT IDENTIFICATION NUMBER:	UN 1203
DOT SHIPPING LABEL:	FLAMMABLE LIQUID

PLACARD:

15. REGULATORY INFORMATION

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

ACUTE HEALTH	CHRONIC HEALTH	FIRE	SUDDEN RELEASE OF PRESSURE	REACTIVE
X	X	X	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

INGREDIENT NAME (CAS NUMBER)	CONCENTRATION WT. PERCENT
Benzene (71-43-2)	0.1 to 4.9 (0.1 to 1.3 for reformulated gasoline)
Ethyl benzene (100-41-4)	< 3

n-Hexane (110-54-3)	0.5 to 4
Methyl-tertiary butyl ether (MTBE) (1634-04-4)	0 to 15.0
Toluene (108-88-3)	1 to 15
1,2,4- Trimethylbenzene (95-63-6)	< 6
Xylene, mixed isomers (1330-20-7)	1 to 15

US EPA guidance documents (www.epa.gov/tri) for reporting Persistent Bioaccumulating Toxics (PBTs) indicate this product may contain the following deminimis levels of toxic chemicals subject to Section 313 reporting:

INGREDIENT NAME (CAS NUMBER)	CONCENTRATION - Parts per million (ppm) by weight
Polycyclic aromatic compounds (PACs)	17
Benzo (g,h,i) perylene (191-24-2)	2.55
Lead (7439-92-1)	0.079

CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS

This product contains the following chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

INGREDIENT NAME (CAS NUMBER)	Date Listed
Benzene	2/27/1987
Ethyl benzene	6/11/2004
Toluene	1/1/1991

CANADIAN REGULATORY INFORMATION (WHMIS)

Class B, Division 2 (Flammable Liquid)
Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. OTHER INFORMATION

NFPA® HAZARD RATING	HEALTH:	1	Slight
	FIRE:	3	Serious
	REACTIVITY:	0	Minimal
HMIS® HAZARD RATING	HEALTH:	1 *	Slight
	FIRE:	3	Serious
	PHYSICAL:	0	Minimal
			* CHRONIC

SUPERSEDES MSDS DATED: 07/01/06

ABBREVIATIONS:

AP = Approximately	< = Less than	> = Greater than
N/A = Not Applicable	N/D = Not Determined	ppm = parts per million

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
AIHA	American Industrial Hygiene Association	DOT	U.S. Department of Transportation [General Info: (800)467-4922]
ANSI	American National Standards Institute (212)642-4900	EPA	U.S. Environmental Protection Agency
API	American Petroleum Institute (202)682-8000	HMIS	Hazardous Materials Information System

IARC	International Agency For Research On Cancer	REL	Recommended Exposure Limit (NIOSH)
MSHA	Mine Safety and Health Administration	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
NFPA	National Fire Protection Association (617)770-3000	SCBA	Self-Contained Breathing Apparatus
NIOSH	National Institute of Occupational Safety and Health	SPCC	Spill Prevention, Control, and Countermeasures
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)	STEL	Short-Term Exposure Limit (generally 15 minutes)
NTP	National Toxicology Program	TLV	Threshold Limit Value (ACGIH)
OPA	Oil Pollution Act of 1990	TSCA	Toxic Substances Control Act
OSHA	U.S. Occupational Safety & Health Administration	TWA	Time Weighted Average (8 hr.)
PEL	Permissible Exposure Limit (OSHA)	WEEL	Workplace Environmental Exposure Level (AIHA)
RCRA	Resource Conservation and Recovery Act	WHMIS	Workplace Hazardous Materials Information System (Canada)

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